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ABSTRACT

This study describes a language intervention approach using telephones in a classroom to motivate and facilitate spontaneous oral language in a group of language-delayed kindergarten children. Specific purposes of the investigation were (1) to determine what effect the availability of telephones had on the spontaneous oral language of language-delayed children, (2) to determine if an increase in oral language participation occurred as a result of the intervention, and (3) to determine if the children's language developed. Participating were 32 language-delayed children of multiethnic backgrounds, 18 boys and 14 girls, who were assigned to experimental and control groups within a regular kindergarten class. Subjects were observed during dramatic play, and their speech was recorded verbatim by their teacher and an aide who made anecdotal notes. Subjects in the experimental group were free to use telephones; control group members did not use telephones in the classroom. To assess oral language output several measures were used, including mean length of response, mean of five longest sentences, and Tough's Langauge Variety Classification. Analyses of data gathered over a 3-month period indicated that for the experimental group there was an increase in oral language participation, an increase in sentence length, and and an increase in mature use of language. It is suggested that an innovative technology-based intervention designed to incidentally encourage talk seems to be an appropriate approach to oral language development. (RH)

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FACILITATING SPONTANEOUS ORAL LANGUAGE IN FUNCTIONAL LANGUAGE-DELAYED KINDERGARTEN CHILDREN USING TELEPHONE TECHNOLOGY

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Abstract

This study describes a language intervention approach using telephones in the classroom to motivate and facilitate spontaneous oral language in a group of language-delayed kindergarten children. Thirty-two children of multiethnic backgrounds, eighteen (18) boys and fourteen (14) girls, were assigned to an experimental and control group within a regular kindergarten class. The pragmatic interpersonal approach of Watzlawick, Beavin, and Jackson and Bayles' theory of constraining behavior in the environment served as the model for facilitating talk in language-delayed children. The classroom approach for the experimental group consisted of non-constrained use of telephones during dramatic playtime. All of the children in this group used the telephones to make calls and to answer incoming calls. A comparison of the pre-test and posttest oral language samples of the gorups during a three month period indicated that for the experimental group there was an increase in oral language participation, an increase in sentence length, and an increase in mature uses of language.

Facilitating Spontaneous Oral Language in Language-Delayed Kindergarten Children Using Telephone Technology

At the beginning of each school year in kindergarten classrooms children are highly visible who do not talk at all and who are reluctant to talk in the classroom. Observations were made at the end of the first month of school of children's verbal interactions in eight kindergarten classrooms at a kindergarten center in a suburban New York community. Twenty-five percent of the children were considered delayed in their oral language participation based on several research findings. Some of the children did not talk spontaneously or when speech was elicited and others used one-to-two word responses on an infrequent basis. These children are referred to as language-delayed and functional language-delayed (Hubbell, 1977); Nonverbal (Cicci, 1977); nonlanguage (Gray & Ryan, 1973); and users of restricted code (Bernstein, 1961). Researchers concur that factors which influence this communicative behavior are sociolinguistic in nature which relate to ethnic background (Matluck, 1978; Forrester & Soldier, 1980; Scofield, 1978); Economic background (Wakefield & Silvaroli, 1968; Stickler & Farr, 1979); and classroom conditions (Bayles, 1974; Tough, 1973; Stickler & Farr, 1979).

Language handicaps affect a greater proportion of children

entering school than is generally realized (Eisenson & Ogilivie, 1963). Summers (1976) reported that based on kindergarten screenings from 1973 to 1975 in a suburban New York city community, twenty-five percent of the kindergarten population evidenced language deficits that required special attention and remediation. These deficits included limited developed expressive language, inadequate receptive vocabulary, lack of basic concepts, and reluctance to use oral language.

Many researchers agree that oral language contributes to cognitive development and beginning reading (Cicci, 1977; Danwitz, 1974; Tough, 1973); social-emotional adjustment (Monroe, 1971); and total school success (Hymes, 1972). According to Hymes, researchers who study language have been negligent in their total approach. Most of the research is concerned with scientific investigation of language with minimal attention given to language use and what happens in the classroom.

The environmental context of the early childhood classroom is one of incidental type learning. The use of a variety of materials and equipment in a play type setting fosters talk and learning in young verbal children (Forrester & Soldier, 1980). However, this approach alone apparently does not motivate and facilitate talk in functional language-delayed pre-school children. These children seem to require exceptional motivation and means beyond that which is currently

provided by the classroom atmosphere, procedures, and equipment. Bayles (1974) reported that spontaneous oral language is blocked when constraints are present in the pre-school classroom. Constraints in the form of instruction from the teacher, interference from other children, questioning, and physical limitation of play space. When constraints are present in the classroom children respond with a smaller vocabulary and relatively little discussion. When there is an absence of constraints children use a larger vocabulary and talk for longer periods about the same subject. Whitehurst (1969), Hetenyi (1974), Seitz (1975), and Olsen (1970) concur that the promotion of verbal interaction is more important than verbal stimulation in the development of spontaneous oral language in young children.

The purposes of this investigation were: to determine what effect, if any, the availability of authentic telephones in the classroom had on the spontaneous oral language of language-delayed kindergarten children; to determine if there was an increase in oral language participation; and to determine if there was apparent oral language growth and development.

Language-delayed Behavior

Language-delay refers to the condition in which the child's language development is significantly below his/her chronological age (Hubbell, 1977). The two-year-old who

does not use two-word phrases or cannot follow a simple command, a three-year-old who does not use three or four-word sentences, a four-year-old who cannot be understood when he or she speaks to persons outside the immediate family, all are considered language-delayed (Danwitz, 1974). Functional language-delay refers to children who are delayed in talking without any "recognizable etiological configuration" (Hubbell).

> A five-year-old child's communicative competence is based on a typical verbal output of 10,000 to 15,000 words per day of grammatically correct, meaningful communication, drawing on a vocabulary of 5,000 words. The child's comprehension of spoken language may include a vocabulary three times this size as well as grammatical structures he does not understand." (Danwitz)

Several studies are available that investigated the nature and definition of language-delayed behavior. Gray and Ryan (1973) in their definition of the "non-language" child reported that "the child does not use the verbal linguistic code." The form that oral language takes is evidenced in "elaborated" or "restricted" code (Bernstein, 1961). This code and reluctance to use it in the classroom is affected by cross cultural interplay and linguistic factors between the children, the teacher, and the school in the multiethnic classroom (matluck, 1978; Tough, 1973). According to Tough, until recently, silence was the rule for children in school,

which means that value was not placed on talk in the past. Reading and writing were the accepted methods of communication in the school with teacher talk serving the purposes of instruction. It is only in the last decade that language development has been a major focus for research.

The problem is not the fault of the child, but rather an educational problem of designing a learning setting in which children are comfortable enough to talk (Forrester & Soldier, 1980).

Oral Language Assessment

Linguistic approaches to language diagnosis and evaluation are different from traditional clinical approaches (Irwin, Moore, & Rampp, 1972). The authors reported that Linguists' emphasis is almost entirely with the communicative function and the traditional clinical approach is concerned with the etiology. "The Clinician examines the process in order to change it and the Linguist examines the process in order to understand it."

How we observe language can determine the evaluation and management plan (Cicci, 1977). The plan and result of the procedures and remediation will be affected contingent on the focus; syntax-morphology, semantics, phonology, the whole process of communication, a part of language arts that includes listening, speaking, reading, and writing or content versus form of the language used. For the purposes of this

investigation assessment of oral language was concerned with observation of children's spontaneous oral language behavior for the purposes of motivating and facilitating talk in the classroom.

Formal and informal means of assessing the communicative competence of kindergarten children was investigated by Black (1979). A comparison was made of children's oral language in an informal context with two standardized measures, Circus 10 and the Illinois Test of Psycholinguistic Abilities (ITPA). In general the sociodramatic area provided more comprehensive information about the child's grammatical competence than the two standardized tests. The standardized tests did not adequately demonstrate the child's vocabulary diversity. In the sociodramatic context six of the seven functions of language were evoked while Circus 10 and ITPA elicited only one use of language. This investigation suggests that observation of children's oral language in an informal context generally provides more comprehensive information about a kindergarten child's oral language competence that formal tests.

Extensive studies were conducted by McCarthy (cited in Irwin, Moore, & Rampp) of the language of children which introduced a technique of gathering verbal output data. McCarthy used Mean Length of Response (MLR) as the primary estimate of children's linguistic achievement. This method

was earlier advocated by Nice in 1925 and Smith in 1926 (cited in Irwin, Moore, & Rampp). McCarthy wrote that

> The use of MLR has not been superceded by any other measure as to reliability, ease of determination, objectivity, and most easily understood measure of linguistic maturity.

Davis (1937, cited in Irwin, Moore, & Rampp) was the first to indicate another effective procedure for obtaining the child's maximum linguistic skill in a given situation. Mean of Five Longest Sentences (M5L). This procedure is applied to the same language sample used for MLR.

Tough (173) reported on the assessment of children's oral language growth and development using seven categories of types of responses. The language categories are arranged along a continuum from simple to complex uses of language. Language samples are coded according to whether the language is Self-Maintaining, Directing, Reporting, Logical Reasoning, Prediction, Projecting, and Imagining.

Oral Language Intervention

Just as children need intervention in reading, mathematics, enrichment for the slow learner and the gifted learner, language-delayed pre-school children need intervention to facilitate talk in the classroom.

Language development research with regard to facilitating spontaneous oral language in language-delayed children point

to environmental conditions as vital to the motivation, facilitation, and development of oral language. Hubbell (1977) summarized several studies concerned with facilitating spontaneous talking in language-delayed children from the clinical view. These studies focused on the pragmatics of interpersonal communication (Watzlawick, Beavin, & Jackson, 1967) and did not depend on prerequisite language skills such as specific vocabulary items, or semantic reference, syntactic construction or phonological skill. These training goals are concerns of cognitive and linguistic emphasis (Hubbell). The studies reviewed demonstrated that formal programming is not necessary to motivate talking in all children or to increase the rate of that talk, during the early stages of development (Hubbell). Facilitation has been demonstrated to be effective in cases of mental retardation and functional language-delay. Children who exhibit difficulty with processing information, such as attention, memory, or sensory integration may not be able to gain from such an informal approach (Hubbell).

The facilitative approach to spontaneous oral language development is supported by several researchers from various points of view: Pragmatics, (Watzlawick, Beavin, & Jackson, 1967); Environmental Effects (Cazden, 1970; Bayles, 1974; Labov, 1968); Parent-Child Interaction (Nelson, 1973; Marshall, Hegrenes, & Goldstein, 1973; Whitehurst, Novak, & Zorn, 1972; Hetenyi, 1974; Seitz & Riedell, 1974; Seitz & Hoekenga, 1974);

Facilitating and Inhibiting Stimuli (Patterson & Cobb, 1971 and 1973; Patterson et al., 1969); Clinical Approaches (Watzlawick, Weakland & Fisch, 1974).

The teacher who stresses language in kindergarten prepares children for the development of successful social-emotional adjustment (Monroe, 1970). In order to foster an atmosphere that provokes talk in the classroom there should be an absence of constraints (Bayles, 1974; Marshall, Hegrenes & Goldstein, 1973, cited in Hubbell; Scofield, 1973). Constraints in the form of instruction, questioning, interference from other children, and physical limitation of play space. Direct attempts to manipulate communicative behavior are to be avoided (Watzlawick, Weakland, & Fisch, 1974, cited in Hubbell). The strategy recommended by these investigators involves less strategy in working with language-delayed children with minimal focus on direct elicitation of talk. Follow the lead of the child is advocated by Hart and Risley (1975), Seitz, (1975) Hetenyi, (1974), and Whitehurst (1969, cited in Hubbell).

The open classroom type setting with its flexible arrangement of furniture, materials located in centers, and less formal teacher/pupil communication provides a more optimal environment for oral language growth and development than a more formal traditional classroom (Forrester & Soldier, 1980). This flexible use of furniture, space, and equipment

encourage dialogue among students and learning from peers. According to this theory the benefit of early language learning happens naturally and without formal instruction. The need is to stimulate real-life experiences, to bring the world into the classroom so that children can begin to understand how the skills that are learned in school relate to the world outside the classroom (Stickler & Farr, 1979).

Teacher training in basic ethnographic techniques as a means of gaining insight into other cultures is advocated by Matluck (1978) and Wakefield and Silvaroli (1968). The teacher contributes to functional language-delay if he or she fails to diagnose the cause and fails to provide experiences from which the children can benefit (Tough, 1973). According to Wakefield and Silvaroli (1979) the economically disadvantaged child is overwhelmed by the overall language system of the school and therefore produces little oral language. Consequently, the school should focus on general adjustment to the school environment rather than concentrate on unusual materials for ethnic groups.

Collection of Data

Pilot Study

A pilot study was conducted by this investigator in 1979, with six (6) language-delayed kindergarten children drawn from a similar population as this study. The purpose of the pilot study was to measure the effectiveness of telephone

technology in motivating and facilitating spontaneous talk in language-delayed children. The subjects were observed at the beginning of the school year to be reluctant to participate in oral language. Two of the children did not speak spontaneously in the classroom, one of the children used one-to-two word utterances after elicited speech, and three others used sentences after elicited speech. The subjects were five girls and one boy with an age range of five-years-two months to five-years-eleven months. The vocabulary IQ range, as measured by the PPVT was 93 to 112. One subject did not respond to testing. Concept development as measured by the BTBC indicated a range of nonresponse to above average for receptive concept development. Hearing capacity assessed by the Puretone Hearing Test indicated that the subjects performed within normal limits.

The telephone educational program known as "Telezonia" consisted of five units that covered grades kindergarten through grade seven and contained one or more audio visual presentations such as film, filmstrips, two telephones, telephone directories, visual aids, and a teletrainer (control panel). The program was modified for this study and was not used as an instructional program but as a facilitating aid for the development of spontaneous talk. Nonconstrained use of the instruments during dramatic playtime was the primary focus of the modification. All of the children in the class

were shown the location of the numbers and letters on the telephone dials and wall charts, shown the film "Telezonia," and listened to the sounds made by the teletrainer. The sounds heard and identified were dial tone, busy signal, and rings. The children were then free to use the telephones and the control panel. The six (6) subjects were observed for an eight-week period of time to determine the frequency of calls made, calls answered, and frequency of operation of the control panel.

The conclusion from this pilot study indicated that the children were attracted to the use of telephones, as all of the subjects used the telephones repeatedly. The two subjects who did not speak in the classroom at the beginning of school made the greatest gains in spontaneous talking after using telephones in the classroom. A pretest and posttest comparison of oral language output showed a significant increase in the number of words used per utterance.

Method

Subjects

The subjects for this study were thirty-two kindergarten children, fourteen (14) girls and eighteen (18) boys, selected from six (6) kindergarten classes. The subjects were identified and categorized at the end of the first month of school, according to the following behaviors: children who were observed to use gestures only to communicate the need, desire,

or intent to speak, those observed to use one-to-two word utterances, or children who used sentences when the choice was made to speak. Two standardized tests were administered; the Peabody Picture Vocabulary Test (PPVT) and the Boehm Test of Basic Concepts (BTBC). The subjects were matched according to their receptive vocabulary and basic concept knowledge and assigned to an experimental and control group. The Puretone Hearing Test was the screening device for eliminating children who indicated a hearing deficit.

Instruments

Verbalization output measures were used to analyze pretest and posttest language samples. To assess oral language output the following instruments were used: Mean Length of Response (MLR), Mean of Five Longest Sentences (M5L), and Tough's Language Variety Classification.

Procedure

The experimental and control group consisted of functional language-delayed kindergarten children who were a part of a regular kindergarten classroom. The subjects of both groups were observed, in this setting, by the classroom teacher and an assistant during dramatic playtime and verbatim utterances were recorded using anecdotal notes. The subjects in the experimental group were free to use the telephones as part of the classroom housekeeping area. The subjects in the control group did not use telephones in the classroom.

In addition to verbatim recordings of talk a record was maintained of the frequency of telephone use by the subjects to assess the motivation or interest provoked by the telephones.

Pretest and posttest language samples of the groups were documented primarily by anecdotal notes of verbatim utterances and in some instances with the tape recorder. All language samples were taken in the classroom. The pretest language sample was collected over a two-week period of time after the subjects were identified and at the end of the first month of school and the posttest language sample was collected over a two-week period of time three months later. McCarthy (1954) reported that while the general procedure for sampling language consists of recording fifty utterances, up to this amount is acceptable in cases where fifty utterances cannot be attained. For this study with functional language--delayed children the maximum number of responses up to fifty was used for the language analysis. The individual subjects were observed for a seven (7) to ten (10) minute period of time daily for time sampling and for the period of time that an event lasted for event sampling. A total of 100 to 150 minutes of verbatim oral language was documented for pretest and posttest analysis. Tape recorded samples were transcribed as soon as possible after the recorded event and compared with the tape recording to check for errors. All language samples were recorded on the Data Sheet for Transcription

of Language Samples adapted from the method used by Eisenson and Ingram (1972). Pretest and posttest language samples were analyzed to determine if the telephone intervention program affected the subjects' spontaneous oral language and oral language growth and development. Language analysis to determine oral language output, Mean Length of Response (MLR), consisted of counting the number of words used in an oral utterance divided by the number of statements made during each period of observation. To determine the Mean of Five Longest Sentences (M5L) the five longest sentences of a language sample was used and the number of words used in those sentences were counted and divided by five (5). These same language samples were used and coded according to Tough's Language Variety Classification System to determine oral language growth and development. Table 1 provides a description of each classification.

Insert Table 1 about here

Statistical Procedure

Analysis of Variance was used to determine whether the observed difference among the means were statistically signficant. Means and Standard Deviations were computed for all variables according to language-delayed performance levels: use of gestures only, use of one-to-two word utterances,

Table 1

Language Variety Classifications
Arranged in Continuum of
Complex Uses

Code Symbol	Explanation
SM	Self-maintaining--Language used to gain feeling of success or superiority; to maintain own comfort, pleasure, and status; to fend off any trespass on person, property, and rights.
D	Directing--Language used to concentrate attention on a particular task, to initiate action, or to control action of other people (assisting, directing, collaborating).
R	Reporting--Language used as a running commentary on what is happening in the world around.
LR	Logical Reasoning--Language used to plan activities and to solve problems.
Pred.	Predicting--Language used to guess outcome of problems and situations.
Proj.	Projecting--Language used in taking on the feelings and identity of others. Pretending to be mother, father, policeman, etc.
Imag.	Imagining--Language used to create imaginary situations; injecting new meaning into the present concrete situation representing new features which can only exist for others if a statement about the imagined situation is made.

and use of sentences, as well as for experimental and control group comparison. Analysis of Covariance was employed to determine the homogeneity of regression for the experimental and control group. The results indicated that Analysis of Covariance was appropriate. In all measures where Analysis of Variance and Analysis of Covariance was used, the level of significance was set at .05. A summary distribution chart was designed for the classification of language variety used by the subjects. Significance for data summarized by distribution was determined by an increase of more than one classification of language variety in the direction of more complex uses of language.

Findings

There was no significant difference in the Mean Length of Response (MLR) of spontaneous oral language of functional language-delayed kindergarten children after using telephone in the classroom.

There was a significant difference in the total oral language output for language-delayed children in the experimental group after using telephones in the classroom.

Insert Table 2 about here

Table 2

Spontaneous Verbal Responses, Three Levels of Language Performance, Experimental Group

Group No.	Language Level	Pretest (1 Month) Total Number Two Week Period	Posttest (3 Months) Total Number Two Week Period
5	Gesture Group	38	173
4	One-to-two Wds. Group	47	176
7	Sentence Group	60	342
16	Total	145	691

Spontaneous Verbal Responses, Three Levels of Language Performance, Control Group

2	Gesture Group	2	50
1	One-to-two Wds. Group	5	16
13	Sentence Group	100	318
16	Total	107	384

There was a significant difference in the Mean of Five Longest Sentences (M5L) of spontaneous oral language of functional language-delayed kindergarten children after using telephones in the classroom.

There was no significant difference in the Mean Length of Response (MLR) of functional language-delayed kindergarten children on three levels of language-delayed behavior: use of gestures only, use of one-to-two word utterances, use of sentences.

There was no significant difference in the Mean of Five Longest Sentences (M5L) used by children who used sentences. There was, however, a significant difference in M5L for children who use one-to-two word utterances after using telephones in the classroom.

There was no significant difference in the variety of language used by children who used gestures only and who used sentences. There was, however, a significant difference in the variety of language used by children who used one-to-two word utterances.

Insert Table 3 about here

There was no significant difference in the Mean Length of Response (MLR) of spontaneous oral language used by functional

Table 3

Summary Distribution of Language Variety Classifications, Pretest-Posttest, Three Groups Language Performance Levels, Experimental Group

Groups	Language Variety						
Gestures	SM	Dir.	Rep.	L.R.	Pred.	Proj.	Imag.
Pretest	X	X	X	0	0	0	0
Posttest	X	X	X	0	0	0	X
One-to-two Words							
Pretest	X	X	X	0	0	0	0
Posttest	X	X	X	0	X	X	X
Sentences							
Pretest	X	X	X	0	X	0	X
Posttest	X	X	X	X	X	0	X

Language Variety Code

Sm	Self-maintaining
D	Directing
R	Reporting
LR	Logical Reasoning
Pred.	Predicting
Proj.	Projecting
Imag.	Imagining

X represents variety of language classification used.

0 represents variety of language not used.

language-delayed kindergarten children in the experimental and control group.

There was a significant difference in the Mean of Five Longest Sentences (M5L) of spontaneous oral language used by functional language-delayed kindergarten in the experimental and control group. The experimental group increase showed an increase in sentence length after using telephones in the classroom.

There was a significant difference in the variety of language used by the experimental and control group. The experimental group used all classifications of language variety after using telephones in the classroom.

Insert Table 4 about here

Conclusions

Children who exhibited functional language-delayed behavior appeared to require exceptional motivation beyond that which was provided by the regular classroom procedures, equipment, and atmosphere.

Spontaneous oral language was facilitated in functional language-delayed kindergarten children when a talk provoking instrument such as the telephone was a part of the classroom equipment. As the classroom atmosphere and equipment provoked

Table 4

Summary Distribution, Language Variety Used,

Experimental and Control

Group

Group	Language Variety						
	SM	D	R	LR	Pred.	Proj.	Imag.
E	X	X	X	X	X	X	X
C	X	X	X	0	0	X	X

SM Self-maintaining

D Directing

R Reporting

LR Logical Reasoning

Pred. Predicting

Proj. Projecting

Imag. Imaging

spontaneous oral language, children began to talk and increased their total oral language participation.

Discussion

"The development of language makes an important contribution to the course of the child's cognitive development" Tough, 1974). "Words help the child to develop concepts, because each time a particular word is used the child's attention is drawn to one or more instances of the concept" (Vygatsky, 1962).

Language deficits found among preschool children, in a study conducted in a suburban New York City community, indicated that limited development of expressive language, lack of basic concept knowledge, inadequate receptive vocabulary, and reluctance to use oral language, represent performance below the children's level of communicative competence. All of these deficits seem to be affected by the use of the telephone intervention approach when used as a part of the classroom equipment and based on a pragmatic approach to language development. This innovative means for developing oral language with functional language-delayed children has promise at the preschool level, contingent on the language emphasis of the instructor. Used pragmatically its promise is in the development of spontaneous oral language with attendant increases in total oral language use, sentence length,

and language variety. Used as a teaching instrument, oral language development skills can be taught and reinforced.

The evidence indicated that functional language-delayed kindergarten children show an attraction for and respond to telephones in the classroom.

It appeared that when language-delayed preschool children's interest is sufficiently piqued, spontaneous oral language is facilitated. Therefore, innovative means whereby technological intervention is used, that incidentally suggests talk, seems to be an appropriate approach to oral language development.

It is suggested that in order to obtain maximum participation in spontaneous oral language an atmosphere of nonconstraint should prevail. Reference is made to constraints in the form of prompts, questioning, instruction, interference from others, modeling, and physical limitation of play space.

When children are encouraged, through incidental means, to use their communicative competence there is an increase in sentence length, as measured by the Mean of Five Longest Sentences, an increase in spontaneous oral language, and an increase in the variety of language used.

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